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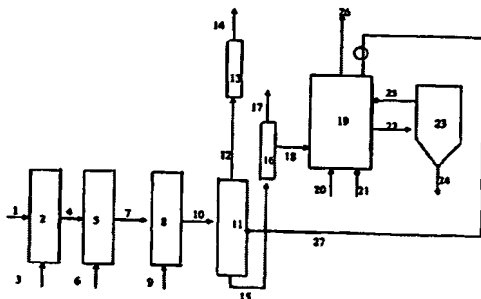
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(54) Title: A PROCESS FOR THE REMOVAL OF SO₂, HCN AND H₂S AND OPTIONALLY COS, CS₂ AND NH₃ FROM A GAS STREAM



(57) Abstract: The invention relates to a process for the removal of SO₂, HCN and H₂S and optionally one or more compounds from the group of COS, CS₂ and NH₃ from a first gas stream, which process comprises the steps of: (a) removing SO₂ from the first gas stream by contacting the first gas stream in a hydrogenation zone with a hydrogenation catalyst in the presence of hydrogen to obtain a second gas stream; (b) removing HCN and optionally COS and/or CS₂ from the second gas stream obtained in step (a) by contacting the second gas stream in a hydrolysis zone with a hydrolysis catalyst in the presence of water to obtain a third gas stream; (c) removing NH₃ from the third gas stream by contacting the third gas stream in a NH₃-removal zone with an aqueous acidic washing liquid to obtain an ammonium-comprising aqueous stream and a fourth gas stream; (d) removing H₂S from the fourth gas stream by contacting the fourth gas stream in a H₂S-removal zone with an aqueous alkaline washing liquid to obtain a H₂S-depleted gas stream and a hydrogensulphide-comprising aqueous stream; (e) contacting the hydrogensulphide-comprising aqueous stream obtained in step (d) with sulphide-oxidizing bacteria in the presence of oxygen in an oxidation reactor to obtain a sulphur slurry and a regenerated aqueous alkaline washing liquid; (f) separating at least part of the sulphur slurry obtained in step (e) from the regenerated aqueous alkaline washing liquid and; (g) recycling regenerated aqueous alkaline washing liquid obtained in step (e) to the H₂S-removal zone in step (d).

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